

REMARKS

The Office Action dated December 15, 2004, has been received and reviewed.

Claims 1-25 are currently pending and under consideration in the above-referenced application, each standing rejected.

Claims 26-47, which were withdrawn from consideration pursuant to an election in response to a restriction requirement, have been canceled without prejudice or disclaimer.

Reconsideration of the above-referenced application is respectfully requested.

Amendment to the Title

In view of the cancellation of claims 26-47 without prejudice or disclaimer, the title of the above-referenced application has been amended to more accurately reflect the subject matter recited in the claims that remain pending.

Rejections Under 35 U.S.C. § 102

Claims 1-11 and 14-21 stand rejected under 35 U.S.C. § 102(b) for reciting subject matter which is purportedly anticipated by that described in Japanese Patent Publication No. 04-024987 to Keita (hereinafter "Keita").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 1 is directed to a method for insulating at least one aperture formed through a substrate. The method of independent claim 1 includes introducing a quantity of unconsolidated material into at least one aperture of the substrate, and selectively consolidating material located adjacent to a periphery of the at least one aperture to form an insulative coating thereon.

Independent claim 10 recites a method for forming electrically conductive vias through a substrate. The method of independent claim 10 includes forming at least one precursor hole

through a substrate, introducing unconsolidated dielectric material into the at least one precursor hole, and selectively consolidated portions of the dielectric material at locations adjacent to a periphery of the at least one precursor hole to form a layer of an insulative coating on surfaces thereof.

The portion of Keita that can be understood (that which was provided in English) discloses fabrication of a portion of a printed wiring board by irradiating, with laser light 9, photosetting resin 10 in a vessel 6. CONSTITUTION. “By repeating irradiation in succession, base material of a printed wiring board . . . can be obtained.” *Id*; *see also*, Figs. 3a through 3c. This resulting base material includes through holes that are oriented nonvertically relative to the plane in which the base material resides. *See* Fig. 1; *see also* PURPOSE (“through holes [are oriented] in the direct except the directly vertical to a hole opening surface”) and CONSTITUTION (“through holes 3 . . . have a 45° gradient to a 2mm thick board . . .”).

With respect to the subject matter recited in independent claim 1, Keita includes no express or inherent description of “introducing a quantity of unconsolidated dielectric material into . . . at least one aperture.” In fact, since the printed wiring board of Keita includes through holes 3 that are formed in photosetting resin 10 as the base material of the printed wiring board is formed, there would be no reason to introduce a quantity of unconsolidated dielectric material into the through holes 3.

Moreover, Keita neither expressly nor inherently describes “selectively consolidating unconsolidated dielectric material . . . to form an insulative coating on surfaces of . . . at least one aperture.” In fact, there is no express or inherent description in Keita of any processes for forming a dielectric coating on the surfaces of the through holes 3. This is because the base material disclosed in Keita is formed from a dielectric photosetting resin 10, and the surfaces of the through holes 3 that extend therethrough are already formed from dielectric material.

Therefore, Keita does not anticipate each and every element of independent claim 1, as would be required to maintain the 35 U.S.C. § 102(b) rejection of independent claim 1.

Claims 2-9 are each allowable, among other reasons, for depending either directly or indirectly from claim 1, which is allowable.

Claim 4 is further allowable since Keita neither expressly nor inherently describes dispensing a quantity of unconsolidated dielectric material into at least one aperture. Instead, the through holes 3 that are described in Keita are formed around unconsolidated dielectric material, which remains therein until the base material of a printed wiring board is removed from the photosetting resin 10 within a fabrication vessel 6.

Claim 5 is additionally allowable because Keita includes no express or inherent description of lowering a level of a substrate to introduce a quantity of photosetting resin 10 into a through hole 3. Rather, photosetting resin 10 would already be present in the through hole 3, as the through hole would be formed as a result of nonirradiation of that portion of the surface of the photosetting resin to laser light 9.

Claim 7 is also allowable since Keita does not expressly or inherently describe forming an insulative coating, let alone an insulative coating that includes multiple layers.

With respect to the subject matter recited in independent claim 10, instead of disclosing “forming at least one precursor hole through [a] substrate,” the description of Keita is limited to forming through holes 3 as the base of a printed wiring board is being formed.

Moreover, Keita does not expressly or inherently describe that unconsolidated dielectric material is *introduced* into a through hole 3. Rather, since the base of the printed wiring board of Keita is formed in a vessel 6 of unconsolidated photosetting resin 10, any unconsolidated dielectric material that is present within a through hole 3 as the through hole 3 is defined is already in place when the through hole 3 is defined. Therefore, it could not be introduced into the through hole 3. In any event, since the walls of the through hole 3 are presumably already formed from a dielectric material, there would be no reason to introduce more dielectric material into the through holes 3.

Further, Keita lacks any express or inherent description of selectively consolidating unconsolidated dielectric material *within* a through hole 3. Instead, the portion of the description of Keita that is understood is limited to defining a base with through holes 3 from unconsolidated photosetting resin 10. There would be no reason to “form a layer of an insulative coating on the surfaces of” the through holes 3 of the wiring board base disclosed in Keita.

In view of the foregoing, it is respectfully submitted that the subject matter recited in independent claim 10 is, under 35 U.S.C. § 102(b), allowable over the subject matter disclosed in Keita.

Claims 11 and 14-21 are each allowable, among other reasons, for depending either directly or indirectly from claim 10, which is allowable.

Claim 11 is additionally allowable since Keita lacks any express or inherent description of the shapes of holes 3 that may extend through the substrate 11 disclosed therein. In particular, Keita lacks any express or inherent description of a through hole 3 that may have a substantially cylindrical shape, a substantially frustoconical shape, an hourglass shape, or a bulging center.

Claim 16 is further allowable since Keita neither expressly nor inherently describes dispensing a quantity of unconsolidated dielectric material into at least one aperture. To repeat: any unconsolidated photosetting resin 10 within through holes 3 was there when through holes 3 were defined in the wiring board base.

Claim 17 is additionally allowable because Keita includes no express or inherent description of lowering a level of a substrate to introduce a quantity of photosetting resin 10 into a through hole 3. Rather, photosetting resin 10 would already be present in the through hole 3, as the through hole would be formed as a result of nonirradiation of that portion of the surface of the photosetting resin to laser light 9.

Claim 19 is also allowable since Keita does not expressly or inherently describe forming an insulative coating, let alone an insulative coating that includes multiple layers.

For these reasons, it is respectfully requested that the 35 U.S.C. § 102(b) rejections of claims 1-11 and 14-21 be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

Claims 12, 13, and 22-25 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over that taught in Japanese Patent Publication No. 04-024987 to Keita (hereinafter "Keita"), as applied to claims 1-11 and 14-21 above, and further in

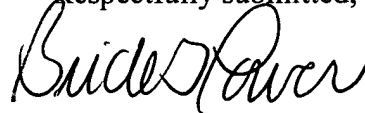
view of teachings from U.S. Patent Publication No. 2004/0112881 A1 to Bloemeke et al. (hereinafter "Bloemeke").

Claims 12, 13, and 22-25 are each allowable, among other reasons, for depending either directly or indirectly from claim 10, which is allowable.

CONCLUSION

It is respectfully submitted that each of claims 1-25 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



Brick G. Power
Registration No. 38,581
Attorney for Applicant
TRASKBRITT, PC
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

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